Patient First or Fistula First: The Need for Clinical Judgment for Vascular Access

Prof. Bernard Canaud
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Speaker name: Prof. Bernard Canaud

☐ I have the following potential conflicts of interest to report:

☐ Consulting

☒ Employment in industry (FMC)

☐ Shareholder in a healthcare company

☐ Owner of a healthcare company

☐ Other(s)

☐ I do not have any potential conflict of interest
Outline of the Presentation

1. Vascular access is still a controversial issue in ESKD patients
   - What we know? What are the facts?
2. Questions regarding vascular access are not:
   - Fistula or not fistula?
   - Fistula first?
   - Fistula first and catheter last?
   - Fistula first or patient first?
3. Today crucial questions are:
   - Does one size fits all?
   - What are the criteria of choice?
   - What are the facts? What is the benefit/risk ratio?
   - Who are the decision-makers?
   - Why we should move a patient-centered approach?
4. Take home message
   - Right balance for medical choice
   - Evidence-based versus clinical-based medicine
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Hemodialysis vascular access: The Achilles’ heel remains

SJ Schwab

Maintaining vascular access for hemodialysis remains a leading cause of patient morbidity. Surveillance and other technologies continue to improve, but the goal of dramatically improved AV access patency remains elusive.

Schwab SJ. Kidney Int. 2007; 72: 665-666

Vascular Access Update: Lifeline education program helps patients see the value of access care

By LuAnn Aakhus, BA, MT (ASCP), MBA
Vascular Access Is A Daily Concern For CKD Patients

Temporary/Short-Term

- Acute Catheter
- Untunneled CVC

Permanent/Long-Term

- Chronic Catheter
- Tunneled CVC
- AV Fistula
- Autologous
- AV Graft
- PTFE/Biologic

CVC, Central Venous Catheter
Strategy for Vascular Access Creation

• **Primary choice for vascular access**
  Autogenous AVF creation
  • Radial-cephalic AVF
  • Proximal forearm AVF
  • Brachial-cubital/cephalic/basilic AVF

• **Second choice for vascular access**
  - Upper extremity non-autogenous vascular access
    • Grafts as a vascular access conduit
    • Prosthetic grafts - Saphenous vein - Bovine mesenteric vein or Ureter
  - Lower extremity autogenous and non-autogenous vascular access
    • Saphenous or superficial femoral vein transposition
    • Prosthetic graft implantation in the thigh

• **Third choice for vascular access**
  - Tunneled central venous catheter
Strategy for Vascular Access Creation

2.1 The order of preference for placement of fistulae in patients with kidney failure who choose HD as their initial mode of KRT should be (in descending order of preference):

   2.1.1 Preferred: Fistulae. (B)
     2.1.1.1 A wrist (radiocephalic) primary fistula. (A)
     2.1.1.2 An elbow (brachiocephalic) primary fistula. (A)
     2.1.1.3 A transposed brachial basilic vein fistula: (B)

   2.1.2 Acceptable: AVG of synthetic or biological material, such as: (B)
     2.1.2.1 A forearm loop graft, preferable to a straight configuration.
     2.1.2.2 Upper-arm graft.
     2.1.2.3 Chest wall or “necklace” prosthetic graft or lower-extremity fistula or graft; all upper-arm sites should be exhausted.

   2.1.3 Avoid if possible: Long-term catheters. (B)
     2.1.3.1 Short-term catheters should be used for acute dialysis and for a limited duration in hospitalized patients. Noncuffed femoral catheters should be used in bed-bound patients only. (B)
     2.1.3.2 Long-term catheters or dialysis port catheter systems should be used in conjunction with a plan for permanent access. Catheters capable of rapid flow rates are preferred. Catheter choice should be based on local experience, goals for use, and cost. (B)
     2.1.3.3 Long-term catheters should not be placed on the same side as a maturing AV access, if possible. (B)


N = 189 290 212 215 170 123 107 222 217 171 587

Cumulative Survival & Patency of Vascular Access Stratified by AVF vs AVG

1140 Incident HD patients

AVF vs AVG (HR, 0.99; 95%CI, 0.79–1.23)

714 HD patients excluding primary failures

AVF vs AVG (HR, 0.56; 95% CI, 0.43–0.74)

1140 HD patients
AVF 1012 (88.8%)  AVG128 (11.2%)
2 centers, Canada 2000-2010

Vascular Access Survival for Incident HD Patients Starting with Permanent Access

Survival Rate of ESKD Patients Stratified by Vascular Access Use (3yr after initiation)

CHOICE Study
The Choices for Healthy Outcomes in Caring for ESRD

616 Incident HD Patients

Annual Mortality Rates by Type of Vascular Access in Use and Gender

CHOICE Study
616 Incident HD Patients
The Choices for Healthy Outcomes in Caring for ESRD

Annual Mortality Rates By Age Group

**CHOICE Study**

The Choices for Healthy Outcomes in Caring for ESRD

616 Incident HD Patients

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Fistula First Initiative 2003

Action on Fistula

Frequently Asked Questions

1. Why should I get an AV Fistula?
   AVF’s with proper care tend to last the longest for dialysis and require fewer interventions.

2. How do I get an AV Fistula?
   You may initiate this discussion with the physician or nurse in your dialysis clinic.

3. I don’t like needles, how do I cope with the pain & fear?
   There is no denying that an AV Fistula requires the insertion of two needles into the access site. You might ask your clinic or physician if smaller needles can be used or as many patients do, learn to place your own needles. Please inquire with clinic staff about the “buttonhole” technique. You might also try relaxation techniques such as deep breathing exercises.

4. How do I care for my AV Fistula after my dialysis treatment?
   You will be required to hold pressure at the needle sites to stop the bleeding. Keeping it clean is very important. You will also monitor your access on “off” dialysis days for the “thrum” or buzzing associated with your AV Fistula.

5 Reasons to Consider an A-V Fistula:

1. Fewer infections
2. Fewer hospitalizations
3. Fewer problems with clotting
4. Better blood flow for better treatments
5. Usually last years, compared to weeks or months for other access types

CMS Publication #11955 March 2004

ArterioVenous Fistula

To learn more about AV Fistulas and which vascular access option may be right for you, please visit the following websites:

www.esrdneta15.org
www.esrdneta16.org
www.esrdneta17.org

Western Pacific Renal Network
505 San Marn Dr. Suite A 300
Novato, Ca. 94945
Tel: 415-897-2400
Reinforce by Additional Initiative
Fistula First Catheter Last Workgroup Coalition

The Fistula First Catheter Last Workgroup Coalition is comprised of patients, representatives from the Centers for Medicare and Medicaid Services (CMS), the ESRD Networks, the renal community and other stakeholders. It focuses on increasing the use of AV fistulas while decreasing the use of tunneled dialysis catheters as long-term vascular accesses for dialysis, toward CMS’s goal of 68% prevalent AVF in all ESRD Networks. The work of the Fistula First Catheter Last Workgroup Coalition is focused on supporting the renal community, the ESRD Networks, patients, and CMS in efforts to improve vascular access outcomes to:

- Improve patients’ experience of care
- Improve outcomes for the ESRD population
- Decrease the per-capita cost of care.

Fistula First Catheter Last (FFCL) Dashboard
The FFCL Dashboard is produced from data collected from the CROWNWeb application. Once clinical periods are closed, data from these periods are incorporated into the Dashboard. Counts, rates and definitions have been established based on CMS-approved guidelines. The FFCL Dashboard is inclusive of all data elements previously reported through the published FFBI Dashboard and also includes additional data elements and a dynamic new way to view this information. For additional information on definitions and information on how counts and rates are calculated, please review the documentation included below.

Incident ESKD Patients

Prevalent ESKD Patients


Incident ESKD Patients

Prevalent ESKD Patients

USRDS

2014 ADR Vol 2 - 13 Chapter 3 Figure 13
A Call for More Balanced Vascular Access Approach

SPECIAL ARTICLE

Balancing Fistula First With Catheters Last

NEWS & VIEWS

DIALYSIS

‘Catheter Last’ not ‘Fistula First’ in elderly patients
In Focus
Fistula-first and catheter-last: fading certainties and growing doubts


Vascular Access for Hemodialysis in Older Adults: A “Patient First” Approach

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Patient-Centered Care

ONE SIZE DOESN’T FIT ALL
Dialysis Population Has Changed

HD Patients in the Seventies

HD Patients in the Twenties
Medical Profile of HD Patients has Changed: Older, More Diabetics, More Vascular Disease...

<table>
<thead>
<tr>
<th>Variables</th>
<th>Decade</th>
<th>Total</th>
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<tbody>
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<td>98</td>
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<td>Age, years</td>
<td></td>
<td></td>
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<tr>
<td>Mean ± SD</td>
<td>39.0 ± 10.0</td>
<td>52.5 ± 14.8</td>
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<tr>
<td>Range</td>
<td>19–57</td>
<td>17–81</td>
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<tr>
<td>Gender</td>
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</tr>
<tr>
<td>Male</td>
<td>14 (53.9)</td>
<td>59 (60.2)</td>
</tr>
<tr>
<td>Female</td>
<td>12 (46.1)</td>
<td>39 (39.8)</td>
</tr>
<tr>
<td>Primary renal diagnosis</td>
<td></td>
<td></td>
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<tr>
<td>Chronic pyelonephritis/interstitial nephritis</td>
<td>6 (23.1)</td>
<td>14 (14.3)</td>
</tr>
<tr>
<td>Chronic renal failure</td>
<td>2 (7.7)</td>
<td>22 (22.4)</td>
</tr>
<tr>
<td>Diabetic nephropathy</td>
<td></td>
<td></td>
</tr>
<tr>
<td>Glomerular disease</td>
<td>12 (46.1)</td>
<td>17 (17.3)</td>
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<tr>
<td>Miscellaneous</td>
<td>3 (11.5)</td>
<td>8 (8.2)</td>
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<tr>
<td>Polycystic kidney disease</td>
<td>1 (3.9)</td>
<td>7 (7.1)</td>
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<tr>
<td>Renal vascular disease</td>
<td>0 (0)</td>
<td>9 (9.2)</td>
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<tr>
<td>Unknown</td>
<td>2 (7.7)</td>
<td>10 (10.2)</td>
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</table>

Retrospective 40 years study – split 4 decades
2,647 HD pts, Northern Ireland, UK (1970–2010)

Comorbid Profile Has Also Changed
More CV Dis., CHF, Diabetes, Lung Dis....

<table>
<thead>
<tr>
<th>Comorbidity</th>
<th>Europe &amp; ANZ</th>
<th>Japan</th>
<th>US &amp; Canada</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>&lt;45</td>
<td>45-74</td>
<td>≥75</td>
</tr>
<tr>
<td>Coronary artery disease</td>
<td>14.5</td>
<td>43.3</td>
<td>47.0</td>
</tr>
<tr>
<td>Cancer other than skin</td>
<td>6.4</td>
<td>14.3</td>
<td>19.7</td>
</tr>
<tr>
<td>Other cardiovascular disease</td>
<td>20.4</td>
<td>40.0</td>
<td>58.2</td>
</tr>
<tr>
<td>Cerebrovascular disease</td>
<td>8.3</td>
<td>18.4</td>
<td>25.3</td>
</tr>
<tr>
<td>Congestive heart failure</td>
<td>25.0</td>
<td>43.0</td>
<td>47.3</td>
</tr>
<tr>
<td>Diabetes</td>
<td>18.8</td>
<td>34.6</td>
<td>29.7</td>
</tr>
<tr>
<td>GI Bleeding</td>
<td>2.1</td>
<td>4.9</td>
<td>6.5</td>
</tr>
<tr>
<td>HIV/AIDS</td>
<td>1.2</td>
<td>0.3</td>
<td>0.1</td>
</tr>
<tr>
<td>Hypertension</td>
<td>72.5</td>
<td>80.0</td>
<td>79.5</td>
</tr>
<tr>
<td>Lung disease</td>
<td>3.0</td>
<td>13.6</td>
<td>17.2</td>
</tr>
<tr>
<td>Neurologic disease</td>
<td>11.5</td>
<td>10.7</td>
<td>15.1</td>
</tr>
<tr>
<td>Psychiatric disorder</td>
<td>11.9</td>
<td>12.4</td>
<td>9.5</td>
</tr>
<tr>
<td>Peripheral vascular disease</td>
<td>10.6</td>
<td>33.1</td>
<td>36.9</td>
</tr>
<tr>
<td>Recurrent cellulitis, Gangrene</td>
<td>5.5</td>
<td>11.1</td>
<td>7.5</td>
</tr>
</tbody>
</table>

*Based on prevalent cross-section of 8001 patients in DOPPS III
**Europe & ANZ includes: France, Germany, Italy, Spain, Belgium, Sweden, Australia and New Zealand

Criteria for Choosing a Vascular Access

Medical Rationale
Patient Factors to be Considered

- Elderly
- High comorbid profile
- Diabetes degenerative
- Heart failure – Valve – Pacemaker...
- Peripheral arteriopathy (Fontaine stage 2-4)
- Cachexia – Protein energy wasting
- Lung disease
- Liver disease
- Active oncologic/hematologic/lymphoproliferative disorder
- Active infection
- Specific risks
  - Thrombophylia
  - Chronic bearer bacteria
  - Stomy
  - Immunosuppression
  - ...


Physical Examination of the Arms

Physical Examination of Arms

Allen Test Explores Palmar Arch
Predicts Potential Ischemia and Steal Syndrome
Vascular Mapping For Guiding AVF Placement
Artery & Vein network
Vascular Calcification
A Dual Risk, Failure & Ischemia

T2 Diabetic Patient
Male 62yo - CKD5 - HT
Peripheral arteriopathy
Vascular Network Has Changed Too
More Atherosclerosis, Atheromatosis, Vascular Calcification
Patients at **Lowest Risk** of AV-Fistula or AV-Graft Failure

- Normal Allen Test
- Normal blood pressure with a differential of <10 mm Hg between the two arms
- No difference in arm sizes
- Visible vein, easily palpable
  - ≥2.5 mm in diameter for AVFs - ≥4.0 mm for AVGs
- No evidence of previous catheter insertions
- Absence of edema or collateral veins (neck, chest, breast, and upper arms)
- Non-diabetic
- Limited atherosclerosis, Limited vascular calcification
# Patients at **Highest Risk** of AV-Fistula & AV-Graft Failure

<table>
<thead>
<tr>
<th>Patient Characteristics</th>
<th>Comorbidities &amp; Related</th>
</tr>
</thead>
<tbody>
<tr>
<td>✓ Age</td>
<td>✓ Long standing diabetes</td>
</tr>
<tr>
<td>✓ Elderly</td>
<td>✓ Severe hypertension</td>
</tr>
<tr>
<td>✓ Gender</td>
<td>✓ Severe atheromatosis</td>
</tr>
<tr>
<td>✓ Male</td>
<td>and/or atherosclerosis</td>
</tr>
<tr>
<td>✓ Ethnicity</td>
<td>✓ Vascular calcification</td>
</tr>
<tr>
<td>✓ African - Asian</td>
<td>✓ Heart failure</td>
</tr>
<tr>
<td>✓ Past history of thrombosis</td>
<td>✓ Malnutrition</td>
</tr>
<tr>
<td>✓ Thrombophily (F V Leyden mutation, APL...)</td>
<td>✓ Uremic status</td>
</tr>
<tr>
<td>✓ Coagulation disorders</td>
<td>✓ Hyperhomocysteinemia</td>
</tr>
<tr>
<td></td>
<td>✓ Hyperphosphatemia...</td>
</tr>
<tr>
<td></td>
<td>✓ Inflammation - Infection</td>
</tr>
<tr>
<td></td>
<td>✓ Thrombocythemia, Hyperfibrinemia</td>
</tr>
</tbody>
</table>
Technical Feasibility and Expertise

Arteriovenous Fistula Creation

Physical examination by a skilled operator at 4-6 weeks

Identification of candidates with early fistula failure

Investigation of fistula using angiography

Application of interventions to salvage failed fistula

Time to Primary AVF Failure in HD Patients By Surgical Training (# AVF Created)

![Graph showing the probability of primary AVF failure over years since placement for different AVF creation counts.](image)

<table>
<thead>
<tr>
<th># AVF created (median)</th>
<th>Primary Failure n=1957</th>
<th>Secondary Failure n=2113</th>
</tr>
</thead>
<tbody>
<tr>
<td>0-24 (10)</td>
<td>RR 1.00, p-value Ref.</td>
<td>RR 1.00, p-value Ref.</td>
</tr>
<tr>
<td>25-75 (40)</td>
<td>RR 0.66, p-value 0.002</td>
<td>RR 0.60, p-value 0.004</td>
</tr>
<tr>
<td>&gt;75 (225)</td>
<td>RR 0.72, p-value 0.04</td>
<td>RR 0.66, p-value 0.03</td>
</tr>
</tbody>
</table>

VA Choice is Strongly Influenced by Local Results

- Service management
- Success rate
- Complications rate
- Expertise
- Resources
- Cost...
Infection Rate of Vascular Access

- AV Fistula (autologous)
- AV Graft (PTFE)
- Tunneled anchored CVC
- Subclavian
- Internal Jugular
- Femoral
- Untunneled CVC

Episodes/patient-year

Episodes/1000 catheter-days

Infection Rate per Continent

Adapted from Saxena AK et al, Napalkov P et al, Canaud B et al...
Infection Rate per Catheter Care

- Catheter Lock, Combined
- Catheter Lock, Antibiotic
- Catheter Lock, Antiseptic
- Catheter Lock, Citrate
- Exit skin, Topical agent
- Care Improvt, Check List
- Std Care

Local Results Need To Be Considered
Catheter Related Infection over Time


2230 T tunnelled DualCath
1749 patients – (Nov 1982-Nov 2005)
Survival Probability of DualCath Infection Free in a Cohort of 1054 Patients

1054 Tunnelled DualCath Considered as Permanent VA (Nov 1982-Nov 2005)

Renal Treatment Option Has a Strong Influence on Vascular Access Choice

**ESKD**

- Conservative
  - Renal Replacement Therapy
    - In Center HD
    - Home HD or Self Care HD
  - Transplantation (Living, Dead)
    - Home PD
Vascular Access Outcome

Surgeon
Nephrologist
Nurse
Angiologist
Radiologist...

Patient Empowerment
Patient-Centered Care in CKD Management

Adequate Vascular Access

Outcome Improvement

Support & Coordinate Care

Empower Patient

Satisfy Patient Experience

Personalized RR Treatment

CKD Patient
Patient Perception versus Doctor Prescription

Doctor Perspective

Patient Perspective

Good

Acceptable
Patient-Centered Care

Personalized medicine
Patient-Centered Care and Patient-Shared Decision

Special Feature

Revised Dialysis Clinical Practice Guideline Promotes More Informed Decision-Making


Seminars in Dialysis

Prioritizing Patient-Centered Care Implementation and Research for Patients with Kidney Disease

Cavanaugh KL. Sem Dial 2015; 28(2):131–140
Patient Expectation

No Pain

Nurse Skills

Keep Freedom

Fear of Failure
Patient Experience

Expectation
Satisfaction
Quality of life
Burden of disease
Burden of treatment

No Pain
Nurse Skills
Fear of Failure
Keep Freedom
Renal Treatment Option in the Elderly CKD Patients

ESKD

Conservative vs Palliative

Renal Replacement Therapy

In Center HD

Assisted Home Care PD or HD

Nursing Home Medical Home Care

Transplantation (Living, Dead)
Patient Satisfaction
Vascular Access Option in Elderly ESKD Patient

- Competing risk of death prior to dialysis start
- Limited life expectancy on dialysis
- AVF has a high rate of failure to mature
- AVF has potential cardiovascular toxicity
- AVF has potential hazards & complications
- Affect quality of life
- Vascular access management has cost implication
Dialysis or Not? A Comparative Survival Study of CKD Patients Over 75 Years

Cumulative survival

Dialysis ($n=10$)

Conservative ($n=15$)

Days after eGFR fell below 15ml/min

Measuring Patient Satisfaction with Vascular Access: VA Questionnaire Development and Reliability Testing

Instructions: We are interested in finding out more about your views on your vascular access—what you like or don’t like about your access and what problems you are bothered by. Your vascular access can be either a catheter, fistula, or graft. We would be grateful if you could help us out by filling out this questionnaire. All of the information you give is COMPLETELY CONFIDENTIAL. Although we appreciate answers to all questions, you may pass any questions you do not wish to answer.

Overall Satisfaction
1) Circle a number on the scale that indicates your level of agreement with this statement: I am satisfied with my vascular access.

Example from Physical Symptoms Domain
4) Circle a number on the scale that indicates your level of agreement with each statement: During the past 4 weeks I was bothered by pain associated with my vascular access.

Example from Social Functioning Domain
11) Circle a number on the scale that indicates your level of agreement with the following statement: During the past 4 weeks my access caused me problems when bathing or showering.

Example from Complications Domain
12) Circle a number on the scale that indicates your level of agreement with the following statement: During the past 4 weeks my vascular access had problems (i.e. didn’t work properly).

VA-Q 2 occasions 1 week apart
February 1, 2012 - April 1, 2014

132 patients
• 35 fistulas
• 14 grafts
• 83 catheters

Kosa SD et al, J Vasc Access 2015; 16 (3): 200-205
Overall Satisfaction with Vascular Access

Kosa SD et al, J Vasc Access 2015; 16 (3): 200-205
<table>
<thead>
<tr>
<th>Domain</th>
<th>Item (question number)</th>
<th>All accesses</th>
<th>Catheter</th>
<th>Fistula</th>
<th>Graft</th>
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</thead>
<tbody>
<tr>
<td></td>
<td></td>
<td>Mean</td>
<td>Median</td>
<td>Mean</td>
<td>Median</td>
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<tr>
<td>Physical</td>
<td>Pain (4)</td>
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<td>1.00</td>
<td>1.49</td>
<td>1.00</td>
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<tr>
<td></td>
<td>Bleeding (5)</td>
<td>1.55</td>
<td>1.00</td>
<td>1.35</td>
<td>1.00</td>
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<tr>
<td></td>
<td>Swelling (6)</td>
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<td>1.00</td>
<td>1.33</td>
<td>1.00</td>
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<td></td>
<td>Bruising (7)</td>
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<td>1.00</td>
<td>1.24</td>
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<td>Social functioning</td>
<td>Daily activities (8)</td>
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<td>1.00</td>
<td>2.11</td>
<td>1.00</td>
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<td>1.00</td>
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<td>Sleep (10)</td>
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<td>1.00</td>
<td>2.13</td>
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<td>Bathing and showering (11)</td>
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<td>1.00</td>
<td>3.27</td>
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<td>Dialysis complications</td>
<td>Problem on dialysis (12)</td>
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<td>1.88</td>
<td>1.00</td>
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<td>Access care (13)</td>
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<td>1.00</td>
<td>1.66</td>
<td>1.00</td>
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<td></td>
<td>Hospitalization (14)</td>
<td>1.55</td>
<td>1.00</td>
<td>1.72</td>
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<td></td>
<td>Worry about access longevity (15)</td>
<td>3.12</td>
<td>2.00</td>
<td>3.13</td>
<td>2.00</td>
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</tbody>
</table>

Kosa SD et al, J Vasc Access 2015; 16 (3): 200-205
Individualized Approach in Elderly Is Crucial

Managing Older Adults With CKD: Individualized Versus Disease-Based Approaches

What Can We Do to Improve Quality of Life for the Elderly Chronic Kidney Disease Patient?
Edwina A Brown
What Matters for Elderly CKD Patient?
Benefits of dialysis in elderly dependent patients are questionable

QOL & Survival
170 CKD4-5 Pats
Every 3 mo for 3 yrs

HD Hemodialysis, PD Peritoneal Dialysis, CKM Conservative Kidney Management

Benefits of dialysis in elderly dependent patients are questionable

QOL & Survival
170 CKD4-5 Pats
Every 3 mo for 3 yrs

HD Hemodialysis, PD Peritoneal Dialysis, CM Conservative Management, ND Not Decided

Vascular Access Choice in Incident HD Patients
A Decision Model Based on a Simulation Analysis


---

<table>
<thead>
<tr>
<th>Transition</th>
<th>Probability</th>
<th>Data Source</th>
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<tbody>
<tr>
<td>CVC to functioning AVF on first attempt</td>
<td>Logistic regression varying by age, sex, and diabetes status with 90-d transition time</td>
<td>REDUCE FTM (Lok et al.¹)</td>
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<tr>
<td>CVC to functioning AVG on first attempt</td>
<td>0.95 with 30-d transition time</td>
<td>DAC Study Group (Dixon et al.²)</td>
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<tr>
<td>CVC to functioning AVG on second attempt</td>
<td>Logistic regression varying by age, sex, and diabetes status with 90-d transition time</td>
<td>REDUCE FTM (Lok et al.¹)</td>
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<td>CVC to functioning AVG on second attempt</td>
<td>0.95 with 20-d transition time</td>
<td>DAC Study Group (Dixon et al.²)</td>
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<tr>
<td>Continued AVG function</td>
<td>Subsequent function after initial successful creation: 1yr: 90%, 3yr: 80%; subsequent function after successful second attempt: 1yr: 75%, 3yr: 50%</td>
<td>Xue et al.³</td>
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<tr>
<td>Continued AVG function</td>
<td>1yr: 71%, 3yr: 51%</td>
<td>Gilson et al.⁴</td>
</tr>
<tr>
<td>AVG to death</td>
<td>Survival curve on the basis of age, sex, and diabetes status</td>
<td>DOPPS 2</td>
</tr>
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<td>CVC to death</td>
<td>Survival curve on the basis of age, sex, and diabetes status</td>
<td>DOPPS 2</td>
</tr>
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</table>
Patient Survival by Male Gender and Diabetic Status

Patient Survival by Female Gender and Diabetic Status

Total Cost by Gender, Diabetic Status and Age Group

## Tunnelled Central Venous Catheters

<table>
<thead>
<tr>
<th>TVC design</th>
<th>n</th>
<th>%</th>
</tr>
</thead>
<tbody>
<tr>
<td>Tesio catheters</td>
<td>395</td>
<td>49</td>
</tr>
<tr>
<td>Split-Caths</td>
<td>181</td>
<td>22</td>
</tr>
<tr>
<td>Hemosplits</td>
<td>127</td>
<td>16</td>
</tr>
<tr>
<td>Permcaths</td>
<td>109</td>
<td>13</td>
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<tr>
<td>Total</td>
<td>812</td>
<td>100</td>
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</table>

<table>
<thead>
<tr>
<th>Insertion site</th>
<th>n</th>
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<tr>
<td>RIJ catheters</td>
<td>516</td>
<td>64</td>
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<tr>
<td>LIJ catheters</td>
<td>165</td>
<td>20</td>
</tr>
<tr>
<td>Subclavian catheters</td>
<td>11</td>
<td>1</td>
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<tr>
<td>Femoral catheters</td>
<td>120</td>
<td>15</td>
</tr>
<tr>
<td>Total</td>
<td>812</td>
<td>100</td>
</tr>
</tbody>
</table>

Survival Probability of Tunnelled Central Venous Catheter by **Diabetic Status**

Survival Probability of Tunnelled Venous Catheter by Catheter Design

“Failing to Mature” Arteriovenous Fistula
Endovascular Treatment

A

Unassisted Primary Patency

B

Secondary Patency

Survival Function

Follow up (months)

Censored

Follow up (months)

A sleeper provision of the Affordable Care Act (ACA) encourages greater use of shared decision making in health care.

The Patient Protection and Affordable Care Act (PPACA), commonly called the Affordable Care Act (ACA) or, colloquially, Obamacare, is a United States federal statute signed into law by President Barack Obama on March 23, 2010.
Shared Decision Making Is Part of Care
Shared Decision Making Is Part of Care

## European Experience with Shared Decision Making

*Angela Coulter, PhD¹, Martin Härter, MD, PhD, Dipl Psych², Nora Moumjid-Ferdjaoui, PhD³, Lilisbeth Perestelo-Perez, MPsyCh, PhD⁴, Trudy van der Weijden, MD, PhD⁵*

<table>
<thead>
<tr>
<th>Country</th>
<th>Research Evidence</th>
<th>Germany</th>
<th>Netherlands</th>
<th>Spain</th>
<th>UK</th>
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<tbody>
<tr>
<td>France</td>
<td>A number of SDM studies have been carried out in France since the mid 1990s, mainly in cancer care.</td>
<td>Research consortium (2001-7) funded by the Federal Ministry of Health with 10 SDM demonstration projects; large number of projects funded by the Federal Ministry of Education and Research, health insurance companies, German Pension Fund, German Canc Berufsverbande and others (since 2008).</td>
<td>A number of studies in oncology and evaluation of patient decision aids have been conducted in the Netherlands. There has been less focus on changing professional behaviour and implementing SDM in mainstream practice.</td>
<td>Studies of SDM in cancer care, mental health osteoarthritis, diabetes, primary care and some rare diseases have been carried out, including development and evaluation of decision aids, measurement and implementation issues.</td>
<td>Research into SDM started in the early 1990s in the UK and numerous studies have been published since then.</td>
</tr>
</tbody>
</table>
Outline of the Presentation

1. Vascular access is still a controversial issue in ESKD patients
   - What we know? What are the facts?

2. Questions regarding vascular access are not:
   - Fistula or not fistula?
   - Fistula first?
   - Fistula first and catheter last?
   - Fistula first or patient first?

3. Today crucial questions are:
   - Does one size fits all?
   - What are the criteria of choice?
   - What are the facts? What is the benefit/risk ratio?
   - Who are the decision-makers?
   - Why we should move a patient-centered approach?

4. Take home message
   - Right balance for medical choice
   - Evidence-based versus clinical-based medicine
Vascular Access Choice is a Challenge
Guidelines versus Practices

Evidence-Based Medicine

Clinical-Based Medicine
Vascular Access Choice is a Compromise
‘Right Choice’ is Balancing

VA Type
Expertise
Skills
Practices
Patient characteristics

Success rate
Performances
Patient satisfaction

...
Patient-Centered Care, Examples
Think Patient and Do Your Best

85 years, 4 years HD, AVG

92 years, 4 years HDF, EF 20%, CVC